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Thesis

WHALING IN SOUTHEASTERN MASSACHUSETTS; ITS PLACE IN THE ECONOMIC LIFE.

by

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PREFACE

"Whaling was once a great industry in the United States. Whole communities were dependent on its success. When voyages were successful there was prosperity and plenty. When voyages failed there was hardship and hunger. Fortunes were made and lost. The foundation of many a stately old mansion in New England rests on 'oil and bone.' But whaling was not a passing boom, not a thing apart from all other interests, not local in nature and local in effect. Its influence as a social and economic factor was widespread. Whaling was a unit in a great whole--a part of the vast industrial interests of a growing country. It is so no longer. Whaling is practically dead. The almost complete cycle of whaling activity is a good lesson in economics--the lesson of a flourishing enterprise quickly wiped out by changing economic conditions. The history of whaling forms an important chapter in the commercial history of the United States."

Copied from Walter S. Tower---A History of the American Whale Fishery, No. 20 in Publications of the University of Pennsylvania, series in Political Economy and Public Law. (1907)

University of Pennsylvania

"Neither the perseverance of Holland, nor the activity of France, nor the dexterous and firm sagacity of the English enterprise, ever carried this most perilous mode of hardy industry to the extent to which it has been pushed by this recent People; a People who are still, as it were, but in the gristle, and not yet hardened into the bone, of manhood."

From a speech by Edmund Burke before Parliament in 1775.

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WHALING IN SOUTHEASTERN MASSACHUSETTS; ITS PLACE IN THE ECONOMIC LIFE

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I THE WHALE-HIMSELF

The order of Cetacea comprises of whales, porpoises, and the porpoise-dolphins. There are two sub-orders; Mystacoceti, the whalebone whales, including the fin-, blue-, humpback and right whales; and Odontoceti, the toothed whales, including porpoises, dolphins, killer and sperm whales.

Like all mammals, they bring forth the young alive and perfectly formed and nourish them as land mammals do.

Whales are distributed throughout the globe. All species except the "right" whales are thought to migrate from the northern to the southern hemisphere. Annually many migrate equatorialward to mate and bring forth young. Right whales never cross the equator. Whales seem to have a family or community range and may become extinct in a region.

The period of gestation is about one year and a calf is born every year or so. The age to which whales live is not known but some whales have been observed for a period of twenty years.

Whales are the largest animals that have inhabited the globe. The sulphur-bottom or blue whale may be one hundred feet in length and one hundred tons in weight. The average length of the blue whale is seventy-nine feet. The biggest sperm whales are eighty-four feet long, thirty-five to thirty-six feet in girth at the thickest part, and the neck and body

are deeper than broad at all points to the "small", where it is round. The forehead of the sperm whale is eleven feet high, and nine or ten feet in width. If the head of a sperm whale were above water and lying along the surface, it would be as high as a one-story house. If the head were standing out of water, it would be thirty feet high or as high as a three-story house. The flukes are from six to eight feet in length and from twelve to fifteen feet in breadth.

The whale calves are twenty feet or more at birth. They are sixty feet in length by the end of the first year and still nursing. Sexual maturity is reached during the second year.

The whale, being a mammal, breathes air and must come to the surface for it. Whales may come to the surface at intervals of five to ten minutes but can stay submerged for an hour. The sperm whale will "blow" sixty or seventy times at a rising requiring twelve minutes. The intake of air requires hardly any time. The bow-head whale spouts six to nine times and stays down fifteen or twenty minutes. The nostrils are located high on the head and close together. This allows the animal to breathe without exposing much of the head. In all whales except the sperm the nostrils are separate. In the sperm they are united in a single S shaped opening. This

accounts for the difference of the spout in the two types of whales. The right whale and similar whales have the double nostrils located back on the head over the angle of the jaws. They blow straight up, a finner whale as high as twenty or thirty feet; a large blue whale to a height of forty feet. The sperm whale has his single opening nostril located forward on his head and blows forward to a height of two or three feet. The spout is not water but moisture from the highly heated breath which condenses in the cool atmosphere. The aerated blood goes into a cellular reservoir (arterial plexus) where it is stored. Whales do not inhale air when sleeping.

Whales have a cruising speed of six or seven knots an hour. In sudden rushes their speed is greater. It cannot be kept up long and is difficult to estimate. Large fin-back whales are reported to travel at twelve miles an hour. A whale may sink quickly, drop like a mass of lead. This is called sounding.

The whalebone whales eat small red shrimp (Euphasia inermis) the so-called "brit" which are about three-quarters of an inch long. The whale cruises along the surface of the water with open jaws and the shrimp are caught and retained by the sieves of whalebone. The throat of the right whale is eight inches in diameter. The sperm whale feeds on fish,

sepia octopus (eight armed) called giant squid, and sharks. The silver lining of the sperm whale's mouth attracts the squid. His throat is the size of a man's waist.

All whales except the sperm fear their relative, the killer whale, which tears out the whale's tongue.

The whale's eyes are very small giving a restricted range of vision, probably not more than thirty degrees. Located as these are on opposite sides of the head, they probably present two distinct fields of vision. The ears are very small. The external opening is hardly big enough to insert a quill. The right whale has no external opening. The brain of the whale is small for its size and bulk. The cavity containing the brain is ten inches by ten inches and is in the rear of the skull.

The question has often been asked if whales can communicate. This cannot be answered satisfactorily. If one whale is harpooned, others in the vicinity will know it and sound even if the harpooned whale creates no disturbance. Undisturbed schools of whales spread over several miles will all disappear at the same instant. Another moot question is whether whales sing. Many a seaman's tale tells of the whales singing, but scientists are incredulous because whales have no vocal chords.

Whales are gregarious, appearing in schools often as many as five to six hundred in a school. Sperm whales appear in schools of females and young accompanied by a few (one to three) stalwart males. Often schools of young males travel together. Whalers report finding one or two old bulls battle-scarred and solitary. The theory is that they have accompanied and protected a school of females and young until their position is wrested from them in battle by a younger and more vigorous bull. Thereafter they are solitary outcasts except for a similar outcast companion. Female whales show sympathy. A female sperm whale shows motherly instinct and will often rush to the aid of an injured calf and often thereby to her own death. This feeling is not shown by the males.

Many are the curious facts and characteristics of whales. Whales may raise their heads perpendicularly out of water and "look" around. They "stand up like a beaver," so to speak, and slowly revolve, scanning the horizon with their wide-set eyes. The whale's flukes are horizontal and not vertical as are those of a fish. There is not a trace of legs in a whale, not even the most rudimentary, although there are traces of arms in the pectoral region. It is reported that the whales of the northwest coast can relax the blubber of the back and prevent the harpoon from entering. There is one point on

a whale's head which, if touched, will result in his refusal to proceed, no matter how fast he may have been moving. The sperm whale if alarmed emits an oil, called the glip or wake, on the surface of the water. If the whale-boat enters this, the whale gives chase.

Notes on species of whales (Department of Commerce)

Blue Whale, sulphur-bottom finner, (Balaenoptera musculus), Largest whale, average length 79', maximum 100', weight 100 ton. Color--mottled gray. Habitat--cosmopolitan.

Finback, razorback, (Balaenoptera physalus). Average length 62', maximum 81'. Length pectoral finback 12% total length, lanceolate. Color--dark gray above white beelow. Habitat--cosmopolitan.

Sei Whale, Riedolphi's rorqual, (Balaenoptera borealis). Average length 42-43', maximum 53'. Color--dark grey. Habitat--cosmopolitan.

Humpback, (Megaptera nodosa). Average length 45', maximum 55'. Length pectoral finback 25% total length. Color--black with white markings. Habitat--cosmopolitan.

North Atlantic right whale, black whale, (Eubaena glacialis). Greatest length 54'. Color--black. Habitat--temperate water both hemispheres.

Bowhead, Greenland right whales, (Balaena mysticetus). Greatest length 65'. Color--black. Habitat--Arctic waters only.

California gray whale, devilfish, (Rhachianectes glaucus). Average length 40', maximum 49'. Color--black or dark slate. Habitat--North Pacific only.

Sperm Whale, cachelot, (Physeter macro cephalus). Greatest length 80-84'. Head 1/3 total length. Female slenderer and 1/5, 1/3, or 1/4 as large as male. Color--slate gray. Habitat--cosmopolitan. Period of gestation supposed to be 10 months. Number of cubs rarely two, never more.

Killer Whale, orca, grampus, thresher, (Orca orca). Greatest length 30'. Color--black. Habitat--cosmopolitan. Enemy of tuna; preys on white whale, recognized by high back fin.

Narwhal, (Monodon monoceras) 10-14'. Tusk grows from left side of upper jaw to length of 8-10 feet, other teeth lost. Feeds on fish, north side of Alaska and other Northern latitudes.

White Whale, beluga, morsouin, blanc, (Delphinapterus leucas). Average length 11', greatest 15'. Color--white. Habitat --North Atlantic, North Pacific, and Arctic. Food: cod,

haddock, salmon, squid, prawns, bottom fish. Furnishes "porpoise-jaw" oil, and leather for Canadian mail bags.

Blackfish, pilot whale, ca'ing, or grindhval, (Globicephalus melas). Average length 15', greatest 20'. Color--black. Habitat--North Atlantic, North and South Pacific.

Bottlenose Porpoise, (Tursiops truncatus). Average length 8', maximum 12'. Color--gray and white. Habitat--North Atlantic.[1]

[1] Material on Whales from Department of Commerce, Bureau of Fisheries, Volume I, No. 52, July 30, 1930.

II HISTORY OF WHALING

The first people in history known to make a regular business of whaling were the Basques of northern Spain.[1] As these people were preceded in their whaling by the aborigines of Europe, so were the earliest white men in New England preceded as whalers by the Indians.

To consider the weapons used by Indian whalers fills one with awe at the undertaking of such a task by Indians. Stone-headed arrows and stone-headed spears were used. These were similar to the weapons used by the Indians to hunt game on land. The Indian, in order to secure the whales, went afloat on the ocean in winter in a canoe. The frame of it was composed of sinew, the planking of bark and the cracks were calked with fat of animals mixed with spruce gum.

The Indians hunted especially the blackfish and the right whale. When a whale was sighted from shore the Indians would swarm around the mammal in their numerous canoes and get in as many thrusts as possible. Thus, only the strongest whales could withstand the onslaught. The Indians used a barbed harpoon and a float in connection with it. A float of logs or light wood was attached to the harpoon by a short line in order to impede the whale's flight.

When the white men first organized crews for whaling, many a red man was included in the crew.

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[1] J. T. Jenkins--A History of the Whale Fisheries, 36-38.

Whales seemed to attract the attention of the first explorers and settlers along the Atlantic Coast. On the Mayflower some were skilled in fishing and whaling. After whales had been observed near Provincetown this argument was used by some of the settlers for choosing that site. However they had no whaling equipment with them.

The early settlers needed more fats than they could produce. Whales cast upon the shore were cut up and used. There seemed to be little catching of live whales. In 1635 John Winthrop speaks of crossing Cape Cod bay to get three or four whales which had been cast upon the shore.

Questions of property rights in these drift whales sprang up. The General Courts of Plymouth and Massachusetts adopted regulations.[1] Many towns did likewise. In 1652 Yarmouth appointed an officer to receive the oil of the county. Sandwich appointed six men to supervise and regulate the cutting and distribution. The Massachusetts Bay Colony provided for a division of the oil from drift whales, one-third to the crown, one-third to the town, one-third to the finder.

There are three stages in the growth of whaling. The first is the finding and use of drift whales as mentioned above. The second is the pursuing of whales by means of small boats put off from shore. This method developed early

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[1] A. Starbuck--History of the American Whale Fishery, C-T.

on Long Island and Nantucket. The latter island provided early in its history for watch towers to be placed at intervals on the southern shore to report whales seen off shore. These whales were then pursued by small boats. The third stage came with the equipping of ships for long voyages. This stage was reached when the need became great, there was a profitable export, and long trips had to be undertaken to furnish this demand.

Southampton, Long Island,[1] seems to be the first place to have adopted searching for whales as a calling. Records of 1647 give detailed and business-like regulations. A few years later, regular expeditions were undertaken from shore. Many of the eastern towns of Long Island took up the industry.

It is to the history of Nantucket, that one turns for "An interesting portrayal of the conditions in a community dependent on a single industry--and that industry as full of ups and downs as was the whale fishery. Nowhere else in the literature is there a more vivid account of the way in which a people's environment literally forced them to a particular industry, and how that industry shaped and modified social and economic conditions." *

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* Quoted by W. S. Tower in "A History of American Whale Fishery". Page 2.

From Obed Macy--History of Nantucket. (1907)

[1] J. R. Spears, The story of New England Whalers. Chapter II is devoted to Long Island.

The very early records give very little information about whaling. In 1690 the inhabitants of the island sent for a man to instruct them in whaling. Ichabod Paddock came from Salem to do this.1 It was he who divided the south shore of the island into four districts; each one three and a half miles long. In the center of each a hut was built and six men were assigned to the district. A tall spar with a crow's nest was erected and constantly manned to sight whales. When a whale or a school of whales was sighted, the cry was given, the crew put out in a boat, captured a whale, brought it to shore and there tried out the blubber in try-works erected on the shore. The scheme was communistic, all the men sharing equally in the profits. In some cases where Indians were used, they were paid in clothes and necessities. In the same year (1690), while the people of Nantucket were gathered on a hill watching the sea, one man is reported to have pointed to a school of whales seen off shore and to have said, "There is a pasture where our children's grand-children will go for bread." *
In 1712 the first sperm whale was found.2 Records of 1726 show that eighty-six whales were saved by twenty-eight boats in

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* This incident first found in A. Starbuck--History of the American Whale-Fishery page 17 is wholly unsubstantiated.

1A. Starbuck--History of the American whale fishery, page 17.
2J. R. Spears--The Story of the New England Whalers, page 48.

this "off-shore" whaling.

In 1698 the sloop Mary, twenty-five tons, built in Boston in 1694, was sold to the Nantucket men. This was the first boat larger than a rowboat to be used in whaling from Nantucket. By 1712, the island owned five sloops, weight fifteen to forty tons. These engaged in voyages of five to seven weeks duration. By 1714 there were nine sloops engaged in whaling, six of them in the deep-water fishery. Six hundred barrels of oil and eleven thousand pounds of bone sold for eleven hundred £ in 1715.[1] In 1720 the first oil was sent directly from Nantucket to London to get a better price than in American ports. The year 1730 saw twenty-five whalers bring in products valued at £3200 and also the first boat of 118 tons engaged in the industry.[2] By 1732 ships had gone to Greenland and crossed the equator to Brazil and the Falkland Island to hunt whales.

The wars between France and England (1740-1762) caused the whaling ships to be bothered by cruisers and privateers.

Of 78 whalers clearing American ports in 1762 more than one half were from Nantucket. In 1766, 118 vessels of an average of seventy-five tons each, cleared Nantucket and brought home 11,969 barrels of oil valued at $129,983. In 1770, 125 ships, average 93 tons, brought in 14,331 barrels of

[1] J. R. Spears, The Story of the New England Whalers, page 316.
[2] J. R. Spears, The Story of the New England Whalers, page 317.

oil valued at $358,200. In 1767, 50 New England whalers went to far southern waters. During this period, Nantucket had as many whaling ships as all other American ports, combined.

New Bedford, situated as she is at the head of Buzzards Bay, did not engage in drift whale or off-shore fishery. In 1765 the four sloops, the Nancy, Polly, Greyhound, and Hannah, owned by Joseph Russell, Caleb Russell, and William Tallman comprised her whaling fleet.[1] New Bedford's growth comes at a later period.

During this period the towns of Cape Cod; Provincetown, Truro, Eastham, Wellfleet, Falmouth, Woods Hole, and Edgartown on Martha's Vineyard were going through steps similar to those in Nantucket, in the whale fishery. These towns were, however, less important and less dependent on whaling alone.

Of all the colonial industries the whale-fisheries was almost the first to be affected by the hostility of the colonies toward the mother country. The British ministry interfered with whaling as a means of punishment.[2] In February 1775, a bill was passed by Parliament restricting the Commerce of Massachusetts with England and the West Indies. This bill prohibited fishing of any kind. The merchants and traders of London petitioned Parliament, protesting against this law. This active minority which were affected worked against the

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[1] A. Starbuck,--History of the American whale-fishery, page 43.
[2] A. Starbuck,--History of the American whale-fishery, 58-66.

law. Burke espoused their cause. Before April 19, 1775 whaling had been suspended.

During the war itself many whale-ships were destroyed by the British. Some sailed despite the dangers and many were captured. Nantucket, especially, suffered at this time. Dependent as she was on whaling, her economic life came to a virtual standstill when her ships could no longer sail. The exposed location of the island invited British attack. In 1781 Admiral Digby sailed into Nantucket harbor and ruined many ships and much property.[1] For a time during the Revolution it seemed that Nantucket might be lost to the union. Many of the population were Quakers and there was much sympathy for alliance with England. At least, many so argued, England could afford the island protection and the United States was unable to do that. By 1785, the fleet had been shattered. 134 ships had been destroyed or captured during the war.

The period after the Revolution saw the rebirth and further growth of the whale-fishery. Greater fleets than ever before were built and sailed. In 1785, the Massachusetts legislature passed a law giving a bounty on whale oil brought into Massachusetts by vessels owned and manned wholly by inhabitants of the state.[2] The bounty stimulated the trade in Massachusetts and so concentrated it that it led to the market

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[1] J. R. Spears--The story of the New England whalers, 85-96.
[2] W. S. Tower--History of American whale-fishery, 104-105.

becoming over-stocked.

William Roche[1] of Nantucket wished to transfer a large portion of Nantucket's whaling business to Europe when the Massachusetts market became over-stocked. Europe offered a better oil market. He negotiated with the British government but failed to reach an agreement due to the British refusal to pay the costs of moving the industry. His negotiations with the French government proved successful and accordingly he, his family and some friends moved to Dunkirk taking their business with them. For several years they were successful but when trouble broke out between France and England the profits vanished. In 1794 he returned to Nantucket and the following year moved to New Bedford. At that time New Bedford begins her spectacular rise in the industry.

The revival after the Revolution was accompanied by an increasing world consumption of sperm and right whale oil. Fleets had to go further in search of oil. Ships had to be larger. Brigs, barks, and full-rigged ships were used. More men had to be employed, and more distant places were drawn on for the increased labor demand.

The war of 1812 put the whaling business in jeopardy. Few people believed that the war would really come, so ships had not been hindered from sailing. Neither were they recalled

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[1]J. R. Spears--The story of the New England whalers, 102-108.

when the war broke out. As a result many ships were captured or destroyed. The year 1815 saw Nantucket again in desperate straits. However, her recovery was quick. In 1812 Nantucket had a fleet of 46 whalers; in 1815, 63 whalers; in 1830, 72 whalers.[1]

Between the War of 1812 and the Civil War, whaling reaches its height. The increasing slaughter of all countries sends ships to seek new cruising grounds. After 1819 the Pacific becomes the most valuable whale-fishing region. Especially is the sperm whale hunted. The growth of the industry may be gathered from the accompanying table of sailings from the principal ports. The growth of New Bedford whaling and the decline of Nantucket whaling should be noted.

Number of Ships Sailing from Ports in Year Mentioned to Engage in Whale Fishing

Place	1815	1820	1830	1840	1850	1860
New Bedford, etc.	12	43	80	97	115	96
Nantucket, etc.	50	47	23	25	15	8
Cape Cod	--	8	5	23	27	18
New London	--	3	15	23	19	9
Long Island	3	8	10	22	9	2
Other Conn. and Mass. Ports	--	5	2	20	13	11
New York Ports	2	8	3	1	--	--
Rhode Island	1	2	10	24	4	1
	68	124	148	235	202	145

Nantucket figures include Edgartown.
New Bedford figures include Fairhaven.

(From T. Hart--New England Whale Fisheries.)

[1] W. S. Tower--History of American whale-fishery, 49.

When the most valuable cruising grounds changed from the Atlantic to the Pacific, voyages became longer and ships of necessity had to be larger. The double trip around the Horn, the numerous supplies necessary, the large catches to make the venture pay, the three-year or more voyage, all caused this increase in size. A sand bar across Nantucket's harbor entrance permitted ships to enter which drew no more than 9 to 10 feet of water. The larger whale ships drew 15 or 16 feet. To keep their industry and meet these newer requirements, Nantucket men devised a novel invention. A type of floating drydock called "Barkers' Camel" was constructed. * Two separate flat-bottom hulls each 135 feet long, 19 feet deep and of 20 foot beam were constructed. Each was propelled by a four horsepower engine. The same engine was used for working windlasses and the powerful steam pumps. The inner side of the hulls were curved to fit the form of a ship. The two were held together by heavy chains on which the keel of the ship rested. When empty "The Camel" drew three feet of water. Within the hull, there were two levels, a lower hold and a "between decks". In the lower hold were several chambers with individual water gates. When these were opened, the water

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* An interesting model of this may be seen in the Whaling Museum at Nantucket--information following taken from Whaling Museum at Nantucket.

rushed in, the hulls sank and the chains were below the level of the ship's keel. The ship was floated in, made fast, the water gates were closed, and the pumps started to pump the water out until the ship was raised to draw only seven feet of water. Then steamboats towed it over the bar. The first ship to be so conducted was the Constitution in 1842 on her outbound voyage. In the next three years 76 ships were taken over the bar by this method. "The Camel" was used until 1854 and then broken up. In this way did Nantucket hold on to a little of her declining industry for a few years more.

New Bedford with her better harbor, her larger population, her more fertile and more populous hinterland to draw on for men and supplies surpassed Nantucket in the 1820's and assumed the leadership in the industry, which she held until the passing of the industry.

Much has been written about whale-ships engaging in slave smuggling in the period before the Civil War.[1] Some did go into the slave trade. Five whale-ships of a total fleet of 2000 are known to have been so engaged. More probably did go into the trade unknown to us. A whaler was well fitted for slaving. They cruised the same region whether on whaling or slaving. This was an advantage at a time when England was suppressing the trade. The large pots of the try-works could be used to

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[1] J. R. Spears--The story of the New England whalers, 355-364.

cook food for the slaves. Water could be carried in the barrels in the hold. And the gains from such an enterprise, when successfully completed, were great.

The Civil War caught the whaling industry wholly unprepared for a war. Many ships were out on long voyages. Those in the Pacific were thought to be quite safe. There were many encounters between privateers especially equipped to prey on the northern ships. Some whalers escaped here by flying the Hawaiian flag.

The Shenandoah, a steamer, under Lieutenant James Iredell Waddell, was sent out to prey on the whalers. Lieutenant John M. Brooke of the Confederate Navy had been with the U. S. Navy in the North Pacific and knew the whalers. At Ascension Island three ships were destroyed. Leaving that island on April 13, 1865, between May 27 and the end of June, she captured twenty-four whalers. On June 22, five whalers were destroyed. The captain was told that the war was over, but since this could not be proved, the Shenandoah did not turn back. On June 23rd, one whaler was destroyed; on the 25th, one; on the 26th, six. The trader, Susan Abigail, left San Francisco on April 19th carrying newspapers telling of Lee's surrender. Since the papers carried no formal proclamation, the Susan Abigail was burned. On June 28th eleven ships were captured. Two were

released to carry home the crews of all eleven. On August 2nd, from the English Bark, Barracouta, the captain heard of the overthrow of the Confederacy. The Shenandoah then surrendered to the British and was later turned over to the United States, having captured about forty whalers and destroyed most of them.

The Alabama, built and outfitted in England, is famous for her havoc to American shipping during the war. She did great destruction to whalers also. An account, that of Starbuck,* says the Alabama, capturing the Ocean Rover of Nattapoisett, set her on fire at nightfall in order to lure other whale-ships to her assistance. Eight whalers, four from New Bedford and four from the Cape and Connecticut, fell into the trap and were captured. Semmes** tells of the capture of each boat separately. Each crew was permitted to leave in its own boat. This act has often been quoted against the Alabama rather than in her favor. In Semmes's account no boat was burned at night but one was burned in the late afternoon. No other whaler came to her assistance.

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* From Starbuck, A. --History of the Whale-Fishery from its earliest inception to 1876, quoted in Sprague, J. R.--The Story of the New England Whalers. Page 373.

** Quoted in Sprague, supra.

A great blow to whaling was given by the United States government although it was not recognized as such at the time. The federal government bought forty-five vessels. Twenty-four of these were old whalers. From $3150 to $6500 was paid for each. The gear was sold and the ship was fitted for convenient scuttling. Captain Rodney French was elected commander while seventeen of the twenty-four lay in lower New Bedford harbor awaiting orders to sail. December 19-20, this fleet appeared in the channel of Charleston harbor. They were stripped of sails and rigging, and their masts were cut away. The plugs were pulled and they sank, blocking the entrance to the harbor as the skeleton crews left in their small boats to be picked up by federal warships outside the harbor. This "Stone Fleet", as it was called, was the most famous of the means the federal government used to make the blockade of southern ports more effective. The name was due to the stone and sand that was used as ballast. Many owners found it profitable to dispose of whalers to the federal government at a good price instead of continuing to operate them, and many never replaced the vessels so sold.[1]

The whaling industry never recovered from the blow given it by the Civil War. The causes for the decline are several. Injury to the whaling fleet at the hands of the Confederates

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[1] C. B. Hawes--Whaling, 200.

contributed, although Great Britain did pay for some of the damage in the so-called "Alabama Claims." The ships bought by the federal government and sunk were well paid for and never replaced. The substitution of petroleum as an illuminant and a lubricant ruined the whale oil market. The development of the cotton seed oil industry further injured the market. It was the whalebone, (or more correctly baleen,) that kept the industry alive after the Civil War. Capital was diverted ashore steadily after the war. In 1860 the whaling fleet comprised 508 vessels; in 1865, 220 vessels; and in 1906, 100 vessels.[1]

Spears* advances the theory that the decline of the industry was due to the failure of the supply of Americans for the forecastles, hence for the cabins, and hence for the counting rooms. Americans of this period went west, raised cattle or searched for gold. The game was irue with the merchant marine after the Civil War. One must have sailors before one has a merchant marine. One must have whalemen if one would have a whale fleet.

In 1871, forty-one whalers were fishing in the Arctic. The whales came later than other years and while the catches were running at their best, the weather turned cold. Several

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* Spears, _____, page ___.

[1] J. R. Spears--_____, 335.

ships left. The rest optimistically remained. The winter did set in sooner than usual and thirty-four vessels were frozen in the ice. At first there was hope of a thaw and the possibility of getting out. But on September 14th, all hope being gone, the ships were abandoned. 1219 people, men, women and children, put out from the whalers in their small boats. Sixty hours later after a treacherous trip of eighty miles under conditions of acute suffering from the premature Arctic winter, all the people succeeded in reaching the seven whalers which were in open water and had stood by to pick up the survivors. Conditions were extremely crowded, but all were taken to places of safety on the west coast. This disaster was another blow to the industry.[1] The capital thus destroyed was never replaced. In 1876, twelve ships were caught in the ice and lost.

The growing use of petroleum and the poorer yield per cargo discouraged any further development of the North Pacific. The largest yield, 373,000 barrels for one season, is recorded in 1853. Three years prior to the Civil War there were about 170 ships in the North Pacific. 100,000 barrels was the average catch for these years. In 1876, eight ships brought in 5,230 barrels from the same region. The whaling days were indeed over. Whalebone kept the industry alive for a time but

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[1] W. J. Williams--The destruction of the whaling fleet.....

the large yields, the large profits, and the great fleets were gone.

The first steam whaler was built by Captain William Lewis of New Bedford in 1879.[1] It was called the Mary and Helen. Some of these appeared in the industry in its decline.

San Francisco comes to the fore as a whaling port in the later period, taking the leadership from New Bedford. The first whaler to be owned and equipped in San Francisco was the Pamanett in 1850. For the next thirty years no more than eight whalers are recorded from the home port of San Francisco in any one year. These were engaged principally in coastal whaling. After the destruction of the whaling fleet, steam whalers began to come into use. This made San Francisco. Owners would not start a steam whaler on the Atlantic Coast and send her half way around the world to reach the whaling grounds when it could be equipped at San Francisco and return its cargo there. In 1883 works for the manufacture and sale of whale and sperm oil were erected there. In the same year the whaling fleet numbered 125 whale-ships. Nineteen of these came from San Francisco.[2]

Sperm and southern right whaling were given up about 1880 because of increased working expenses, small catches and fall in the price of oil. Greenland whaling was practically given

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[1] M. B. Maury--Whalers and whaling, page 61.
[2] J. R. Spears--The story of the New England whalers, 416.

up in 1918[1] on account of the wariness and scarcity of the Greenland Right Whale and the fall in price of oil and whalebone.

In 1908, of the forty American whalers, eighteen came from San Francisco. Of these, twelve were steamers and six ships of sail.

The Charles W. Morgan* illustrates well this trend to San Francisco. Built in New Bedford in 1841, she was owned and sailed from that port for a number of years. Her first dozen voyages she returned home with the catch. After that the voyages were made from San Francisco for twenty years. For a while she was owned in San Francisco also. Later she returned to New Bedford and was practically abandoned there at the time of her purchase and restoration. In 1854, 113 whalers sailed from New Bedford. In 1904, five sailed. American whaling today is not dead because it is extinct, but because it can never recover.

Modern whaling is in the hands of the Norwegians. It is pursued from barren British possessions. The British regard it as a speculation; the Norwegians, as an industry. In 1886, Captain Svend Foyn of Tonsberg, Norway, invented a plan for

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* The Charles W. Morgan is the whaler bought by the late Col. E. H. Green and enshrined at Round Hill, Dartmouth, Mass. Equipment, etc., restored. Open to public.

[1] W. G. B. Murdock--Modern whaling and bear hunting, 312.

capturing finner whales.[1] They were numerous but were not hunted due to the fact that they were too strong and too heavy to kill from the old-style row-boat. His process was to mount a small cannon on the bow of a small steamer, and with the cannon to fire a heavy harpoon, one and a half to two hundred-weights, attached to a four and a half hawser. This steamer and line were sufficiently buoyant and strong to play the whale and to haul its body up from the depths when it sank dead. Greenland right whales and sperm whales both floated when they died. Fortunes were made from finner whale hunting off the Norwegian coast.

Today's whaler is a veritable floating factory. Large steamers of up to seven thousand tons burden are used. Three or four small steamers set out from the floating ship usually anchored in a sheltered bay. They harpoon whales within a radius of 80 or 90 miles. Sometimes these steamers operate from a shore factory. Often the dead whale is inflated with air to keep it afloat and to make towing to the base easier. At the steamer the whale is attached to a windlass and drawn up a chute on board where all the cutting is done. All parts of the whale are utilized. The carcass is used for fertilizer. Thus has the chase, the harpooning, the stove boat, the cutting in, the frying out, with their attendant risks, all given way

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[1] W. G. B. Murdock--Modern whaling and bear hunting, page 316. Material following about modern whaling drawn from the same source.

to a scientific slaughter house. Two has from England given way to Romney.

III METHODS AND EQUIPMENT

The whale-ship* was a boat adapted for its trade and differed from other boats according to the demands put upon it. The largest were 125 feet long. They were of greater width than ordinary sailing ships. The bows often carried old figure heads.** The sterns were cut square. The sides and bottoms were sheathed with copper. Broad, strong and stalwart, a whale-ship did not present as attractive a picture as other sailing ships of the time. One observer stated that he believed that whale-ships were made by the yard and cut off at intervals.*** Speed was not an object. Large carrying space in the hold for water and supplies on the outward voyage, and for barrels of oil and for bone on the return voyage was necessary. The bulky appearance of the whaler was added to by the whale-boats hung on davits on the outside of the ship. Usually there were three on the left and one or two on the right, with space for "cutting-in" left amid-ship.

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* The term"whale-ship" means the large boat. The "whale-boat", the small, rowed or sloop rigged boat used for the actual whale chase.

** Many of these are in the Old Dartmouth Historical Society's Museum in New Bedford.

*** Old saying not attributed to any author.

If desired, the measurements of the Charles W. Morgan may be taken as a typical whale-ship.[1] It was built of live oak and copper fastened. Originally it was 351 tons gross, later 314 tons gross and 298 tons net. Its measurements: length, 105 feet 6 inches, beam, 27 feet 7 inches, depth, 17 feet 5 inches. It was first rigged as a ship. Later in 1867, its rigging was changed to that of a bark. Its crew numbered 30 to 33 men. Built for the whale-fishery, it was never used for anything else.

The crew consisted of about thirty men. The captain was a man of experience and ability. He needed a knowledge of sailing, medicine, business and had to be an expert disciplinarian. The mates were three or four in number. Their experience was similar to that of the captain as in an emergency each must be able to take charge. Since a mate must command a whale boat and lance or kill the whale, he needed courage and skill in this. The next in rank were the boat-steerers. They were the harpooners, although to call one be that name rather than a boat-steerer marks one as the most ignorant bed of "land-lubbers". The boat-steerers ranked above the sailors and ate at second mess after the captain and the mates. Their "lay" was considerably more than that of the sailors. A good boat-steerer must be fearless, be an accurate judge of distance

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[1] G. W. Hirshson--The Whale-ship Charles W. Morgan.

and air, and must be strong, able and level-headed. Others were the steward, the cook, and the cooper. The cooper was, as his name implies, in charge of the cooperage but also he had other jobs or any other job to do. He might pull an oar in the whale-boat or he might tend ship with the cook, when the whale-boats were out. He was the ship's carpenter. The sailors were of three grades:--seamen, ordinary seamen and greenhands.

The crews' quarters were in the bow of the boat reached by the forward hatchway. Because of the great space needed for carrying, the crews' quarters were as cramped and small as possible. They were dark and smelly without ventilation or light except an occasional candle. These were the living quarters of 25 to 30 men for three years or more at a time. The officers' quarters were aft.

The usual method of paying the crew and officers was by means of the "lay". The lay was a percentage of the oil and bone taken. The captain might get one barrel in every forty-two taken, the first mate, one in every twenty-four, the second mate, one in every thirty, and so on down to the last greenhand who might get one barrel in 175 or one in 250. The oil was never given to a man, merely the money represented by his lay. The lay never amounted to much. Often it was very small for it was to the advantage of the captain or shipowner

to keep the crews' participation as small as possible. The captain usually managed to have a man charged as much as his lay. His outfit provided by a special outfitter, paid for by the owners, and charged against his lay. Needless to say, the owner paid little and charged much. The outfit was purposely poor and likely to wear out quickly. On the voyage all supplies came from the captain's "slop-chest". A knife that could be replaced at three or four times its original cost. Also the men were sent out unprepared for cold for they, necessitating the purchase of work clothes from the captain's supply. Tobacco, whiskey, knives, paper, etc., all came from the same source. It was not uncommon to have a seaman return from a three years' voyage to find that he was in debt to the owners. He would then sign for the next voyage, get an advance for board until then, and quickly waste it all in useless extravagances and dissipation. Even if he had money, it vanished quickly in the glamour of the town and the first freedom in three years. This made it certain that the seaman would ship again.

Whaling bred a hardy race of men. There was constant danger of capture by enemy ships in the early days. In 1755-1756 Nantucket lost six ships which were captured by the French. In 1771 Dartmouth had three ships taken by the Spanish.[1] More than one whaler fell into the hands of pirates. The men were

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[1] C. B. Hawes--Whaling, 82-85.

stirred by adventure. They were strong, alert, and ready for sea or war. Many a whaler did not fall prey to privateers because of the daring, quick action and strategy of the captain and the men.

Hope of big profits spurred the men on to work.

The commanders were men of daring and high intelligence. Especially was this shown when the ships began to go on the long voyages. By the keen perception and accurate reports of whaling captains much knowledge of ocean currents became known. Many islands of the Pacific were first discovered by whaling ships. In the far North also they contributed much to exploration and discovery. An inspection of the records of about 1850 shows that the vessels were commanded almost without exception by men of American colonial names who descended from the earliest settlers. Year by year, the crews were more and more made up of dark-skinned Western Islanders who later became mates and masters. In the latter days of whaling it was carried on almost entirely by them.*

The outfitting for a whaling voyage was very arduous. There were some 500 or more separate types of articles which

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* See Special [illegible] of the [illegible]

[illegible], page 17.

must be shoved for the often-times three-year trip.* Once the plattened ship is supplied and the crew signed, the date of sailing is set. To get the crew aboard often was difficult, requiring tactics similar to kidnapping. When the crew was enrolled, the ship dropped down the harbor accompanied by the owners, friends, and well-wishers who, with numerous good wishes, left the ship outside the harbor. Left alone, the ship started her trip.

The captain, to impress disciplinary rules, usually addressed the crew, the watches were chosen, and the goods were stowed away.

The whale-boats were next equipped. The whale-boats were clinker-built and "double-ender", approximately 30 feet long and 6 feet beam.[1] Each was sloop-rigged with a collapsible mast, and supplied with both rudder and steering oar, the latter being 23 feet in length. The rudder was used when under sail, the steering oar when rowing. The first oar pulled by the boat-steerer was 14 feet long; the bow oar, 16 feet long; the midship oar, 18 feet long; the tub oar, 16 feet long; and finally the after-oar, 14 feet long. The boat-steerer's midship oar and after oar were dipped off the starboard side; the

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* See more detailed description of the outfitting on page [illegible] following page.

[1]To see the outfitted whale-boats at either the Nantucket or the New Bedford whaling museums does more than any amount of reading.

bow and stern oars, off the port side. In the bow was a chest with a rounded leg brace for the harpooner. On the starboard side the harpooner kept extra coils ready for use. Also a hatchet and a knife for cutting the whale-line if it became entangled. Two tubs of manila rope, two and one half inches round, were carried in the whale-boat. The point tub contained more than the stern tub which was used as an auxiliary. Together the two contained 300 fathoms of line. Often a whale took out all this, and another boat would stand by with its line. Lances; mid flag to plant in dead whale; keg of drinking water; bucket for bailing the boat and bathing the line; and lantern keg containing matches, bread, tobacco, etc., were included in the equipment. At the stern was a loggerhead around which the line was thrown in order to check it. Thus it may be seen that the line went from the coil in the stern, around the loggerhead, and hence through the center of the boat and over the bow in a groove so prepared for it.

Each whale-boat was put in order by its crew under the direction of its harpooner. The crew, as has already been disclosed, consisted of four oarsmen, a boat-steerer (or harpooner) under the command of one of the mates. On the outward trip the boat-steerer pulls the forward oar. At the command of the mate, he stands, gets fast into the whale first and

harpoon, then a second, if possible. This finished, the mate, who until now has been steering from the stern, changes places with the boat-steerer, who now becomes, as his name implies, the "boat-steerer." The mate at the bow takes a lance and gives the death thrust to the whale. The captain may direct a whale-boat* but usually he "keeps" ship with the cooper, cook, cabin boy, and mast-head watch, and directs operations by means of prearranged signals with flags from the mast-head.

With boats in readiness, the ship enters the cruising grounds.[1] The mast-head lookout is set. In the crow's nest one or two men are placed to survey the sea for whales. In the early whale-ships the crow's nest consisted of a mere crosspiece, but later a platform was built to prevent the frequent accidents which resulted when the lookout either fell asleep or became wearied by the motion of the boat, which was exaggerated at that dizzy height. To the platform was added a hoop which came under the arms of the man on duty. In Arctic whaling the lookout was protected from the weather by an inclosed hoop and platform.

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* It will be recalled that in Herman Melville's book (fiction) Moby Dick, the captain had command of a boat.

1 G. W. Ashley--Blubber Hunters has the most interesting account of the chase. An artist of distinction, Mr. Ashley's drawings and paintings, many of which are owned by the New Bedford Free Public Library, make incidents of whaling vivid. See his Whaleships of New Bedford and The Yankee Whalers. For other interesting pictures see Grant, Gordon--Greasy Luck and Dow, George F.--Whaleships and Whaling.

The cry, "Bl-o-ow!", or, "There she Bl-o-ws!" set the ship into a frenzy of action. The eyes whched to their leads to await the order, "Lower away!" When the position of the whales was ascertained, the order was given and the boats were lowered. Usually a prize was given by the captain to the first man to "raise"* whales, and also for the first boat "to get fast".** If possible sails are used on the outward voyage; if not, the oars. Often four to six hours are consumed in hoping down on the whale or the school. During that time the whale has "sounded" several times and the four or five scattered whale-boats are informed of each new appearance by signals from the ship. Sometimes the boats lower only to lose the whale after many hours of work. Once the boat is within striking distance the hazards become great. The flukes*** may shatter the boat, sperm whales have been known to rush or attack a boat; or the whale may simply get away. Suddenly comes the order from the mate to the boat-steerer, "Stand by your iron," He leaps up ready for the next order, "Give it to him," when he hurls first one, then the second iron into the whale. Immediately comes

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* Meaning "to sight".

** Meaning to get its "irons" (harpoons) into a whale.

*** Tail.

the aforementioned change of positions between the mate and the boat-steerer. Perhaps the whale has "sounded" or dropped like lead to the bottom, hence drawing the line out at a terrifying rate--so fast that if the waist oarsman did not continually wet it, it would smoke. This brings the fear that the whale may rise again immediately under the boat. Perhaps the whale churns the sea white with its huge flukes and splinters the whale-boat. Perhaps the whale rushes off at an alarming rate carrying the whale-boat after it. This constitutes a "Nantucket Sleigh-ride". The line rushes out, the men sit on the bottom doing whatever the situation seems to demand, balancing the boat, bailing out the water shipped by the tremendous speed. The boat-steerer stands by the stern, now throwing a turn of line around the logger-head, now letting it off. Whatever the tactics of the whale, the time comes when it tires, the line is painfully and laboriously drawn in and the boat gets near enough for the death thrust. The whale may again try sounding, rushing, or charging, and the work must be done again. When the death thrust is finally given by the mate, 6 feet of steel are ground into the vital organs of the whale. With a great spouting of blood, a wild swimming in circles or a final wild charging, the whale weakens and turns "fin up," just smash. If the catch is one of a school, the boat may

float its flag, cut it adrift and hurry to another. If not, then begins the long pull back to the ship. The nearby boats come and join the line towing the whale. It was not uncommon for a whale-boat to be carried so far off that it would be lost for the night and not picked up until the following day.

The whale is always fastened to the ship and "cut-in" on the starboard side, where the absence of davits and whale-boats amid-ship leaves room for the erection of the cutting stage. This is lowered from the ship's side and extends out some 15 feet over the dead whale. On this the mates stand, balancing themselves against the hand-rail and armed with long-handled, specially sharpened cutting knives, cut the blubber free from the carcass.

A ship will always "cut-in" to windward so that the wind will balance the weight of the whale. If the sea is too rough, this may not be possible.

On the whale the blubber is from 12 to 18 inches thick, fatty, covering just under the filmlike coat called the black-skin.* Of a fatty nature, very close textured and extremely

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* Captain Pierce, an old whaleman "explaining things" to the visitors at the Old Dartmouth Whaling Museum at New Bedford describes the blackskin as similar to the fur-like silk of a silk hat and says that it can be scraped off with a thumbnail.

tough, the blubber separates very readily from the flesh beneath.

The cutting-tackle consisted of a cluster of gigantic blocks fastened to the main mast. From this hang two falls, both well secured forward so that they swung directly over the main-hatch or the blubber-room. From the two falls hang, on some ships two blubber hooks, on other ships one blubber hook and one toggle pin which could be inserted in the blubber. To fasten the first hook in the hole in the blubber made by the mates, just in back of the angle of the jaw, was difficult. Volunteers were called for and one went over the side, lowered by a rope around his waist. In constant peril from the rolling of the sea, of being ground between the carcass and the ship, drowned, or being bitten by the ever present sharks which the mates kept off as best they could with their cutting knives, the fellow, now hanging in mid-air, now covered by a wave, fastened the heavy hook into the blubber.

The windlass now creaked and the large blanket-piece* rode high in the air. When a certain length was in suspension, another hole was made, the second hook or toggle pin inserted and the first piece cut through. The second piece now rode high as the mates cut, the whale carcass rolled around and the

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* Name given the strip of blubber.

blubber peeled off. The blanket-pieces were stored in the blubber-room where one watch continuously cut them into "horse-pieces" or similar pieces, and later cut them into "bible-leaves"* in preparation for later "trying-out". The "horse-pieces" were large lumps of blubber. The "bible-leaves" were like slices in a large loaf of bread that had not been quite

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* Bible-leaves was the term given me by Captain Gardner in the Whaling Museum in Nantucket for these. I found this in no book, but on his authority of many years of actual whaling experience, I have included the same. He had a fine home-made illustration of this. He had a dozen or more blocks of wood, 12 by 12 by 1. These were tacked on one side to a heavy piece of black rubber. The edges of each block were covered with the same black rubber. The pieces of wood could be pushed together to form one continuous piece or they would fall apart into so many pieces joined only on one side.

through the bone, much as leaves are stitched on the side as pages are stitched in a book. Hence the name. They resembled bacon sliced but still attached to the rind. This cutting done with a two-handled mincing-knife facilitated the trying out of the mass.

When the cutting of the blubber from the carcass had proceeded to a point half-way between the hump and the small, work was suspended while the whale was disemboweled and search made for ambergris.* In the case of sperm whales the most valuable oil comes from case. If the whale was small enough, the whole head was taken on deck. If too large and heavy for this, only the lower jaw, called the junk, was taken on deck. This was of no value except for the teeth and bone used by the men in making trinkets and scrimshaw.** The case

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* See discussion of ambergris in next chapter. Pages 73 - 76

** "Throughout the Pacific, and also in Nantucket, and New Bedford, and Sag Harbor, you will come across lively sketches of whales and whaling scenes engraved by the fishermen themselves on sperm whale-teeth, or ladies' busks wrought out of the right whale bone, and other like scrimshander articles, as

are then hoisted to the block of the neck and generally fastened to the side. An opening is cut and the fluid spermaceti is half bailed, half cut from its place. It is like a large tun, corresponding with its shape. The spermaceti is tried out separately, from the body oil since it is more valuable.

If the whale is a right whale there is no spermaceti but there is whale bone in the mouth.

The try-works are just forward of the main hatch. They are built on a platform of bricks over a shallow reservoir of water to prevent harm to the wooden deck. Two large pots are encased in the brick works. Wood is used to start the fires

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**Continued from preceding page: the whalemen call the numerous little ingenious contrivances they elaborately carve out of the rough material in their hours of ocean leisure. Some of them have little boxes of dentistical-looking implements, specially intended for the skrimshandering business. But in general they toil with their jack-knives alone; and with that almost omnipotent tool of the sailor they will turn you out anything you please in the way of a mariner's fancy."

<u>Moby Dick</u>

and after that the fires can be kept going with the tried-out scraps from the pots. The trying-out continues night and day until the job is done. The oil is bailed into a temporary cooler then barreled. Throughout the process a heavy, black smoke comes from the chimneys, darkening the rigging. The odor is the sickening smell of burning fat. A whale-ship trying-out seen on the horizon is reported to resemble an inferno. When the trying-out is finished and all the oil is in barrels and stored below, the decks which have run with oil are cleaned and the process of cruise, catch, cutting-in and trying-out is repeated until the ship is full or has used up its provisions. Even then ships on a Pacific voyage often sold some of their oil in Pacific ports and put out again or reprovisioned in island or Pacific ports for an extended voyage.

Whaling had hazards. These experiences [illegible] whaling rank with the greatest of adventure stories. Many a captain spent a life time in the industry without bringing to himself [illegible] his years. Perhaps he sailed a 'lucky ship'.* Many [illegible]

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* Old whalemen believe definitely that some ships are lucky, others not. "[illegible] [illegible] [illegible] the [illegible] [illegible] of [illegible], the bad fortune of others, [illegible] all the [illegible] [illegible] [illegible] [illegible]."

might be bad trouble, serious injury, mutiny, or loss of his ship. Captain Benjamin Worth is an example of the former,[1] going to sea in 1783 and continuing for forty-one years, he had excellent luck. He was shipmaster for twenty-nine years and during that time no member of his crew was killed by whale nor a limb broken by a whale. An example of the latter is Captain George Pollard Jr., of Nantucket, who commanded the *Essex* whose story will be told later. His next command was the *Two Brothers* which was wrecked on a coral reef in the Pacific. All hands were saved but after these two misfortunes, Captain Pollard gave up the sea.

Some of these adventures [illegible] the two given. The *Awashonka* of New Bedford sailed in 1833.[2] The third mate's boat was attacked by a fighting whale.* It crushed the whale-boat and broke the mate's leg. The *Ann Alexander*[3] of New Bedford sailed in 1850 never to return. A fighting whale not only attacked the whale-boats but also attacked the ship

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* Fighting whales are always reported to be solitary bull sperm whales. Sperm whales are the only ones with teeth, hence the only whales capable of biting, etc.

[1] J. R. Spears--*The Story of the New England Whalers*, 280.

[2] J. R. Spears--*The Story of the New England Whalers*, 258

[3] C. B. Hawes--*Whaling*, 300-307.

with a terrific head-on rush and sank it. The Edward Lee of Provincetown sailed in 1851.[1] Captain Sparks lowered after a school of whales and killed one. His boat became separated from the ship and was lost for six days before being picked up. For a whale-boat to be lost all night was not uncommon. Every lowering might mean death, a "stove boat"*, loss, or injury. In another case a boat lowered from the Ann had the misfortune to have a sperm whale bite off the bow of a whaleboat taking with it the boat-steerer whose legs and hips were in- closed in the whale's mouth at the time he was last seen vanishing beneath the waves.[2] In 1836 the Barclay harpooned a whale.[3] It smashed a boat, killed [illegible], and made its escape. A few days later the Hector met a whale which smashed two boats before it was killed. When the men were

* "A stove boat or a dead whale", was the slogan of the whalers. The men at the oars in the whale-boat pulled to that challenge at every lowering. "Stove boat" was a smashed boat. It is readily seen that pulling [illegible] a heavy mass of [illegible] the usual speed of the chase was [illegible] and to kill a 60 foot animal from a 30 foot boat.

[1] J. R. Spears--The story of the New England whalers, 262.

[2] J. R. Spears--The story of the New England whalers, 287.

[3] J. R. Spears--The story of the New England whalers, 290.

"cutting-in", they found the "irons" of the [illegible] in the whale.* The *Emerald* had a similar experience in [illegible]. After fighting a whale for [illegible] hours, she finally lost it. The *Junior* got a whale that smashed two boats and attacked the ship before it was killed.[1] 31 boats were sent into the whale. It yielded 115 barrels. In 1902 the bark *Kathleen* of New Bedford was struck and sunk by a whale.[2] Accounts of the disaster claim the attack by the whale was premeditated. The *Pocahontas* of Holmes Hole was hit by a whale but was able to make Rio Janeiro.[3] The *Essex*, whose captain has already been mentioned, sailed from Nantucket in 1819. On November twentieth in the Pacific the ship was struck by a sperm whale while the boats were lowered. The whale drew back, made another furious rush, and completely stove in the bow. The two whale-boats were recalled and a spare boat was launched. Provisions were put into the boats. The three boats set sail for South America carrying twenty men. Rations were cut to

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* All "irons" or harpoons carried the name of the ship, homeport, and [illegible] as well as some individual mark for each iron. As ships kept records of such irons once lost, often they could be traced.

[1] J. R. Spears, *The Story of the New England Whalers*, 323.
[2] T. J. Jenkins--*Bark Kathleen Sunk by a Whale*.
[3] J. R. Spears, *The Story of the New England Whalers*, 391.
[4] O. Chase--*Narrative of the ...Shipwreck of the Whaleship Essex*.

indescribable possible hardship. On December twentieth, an island was sighted. Water was obtained but no food. Three men determined to remain despite the skeletons of sailors found on the island. Later these men were rescued by a British vessel. One boat was lost and never heard from again. Of the two remaining boats, after hardships of cannibalism, one was picked up on February fifteenth and taken to Valparaiso; the other was found on March eighteenth by another ship and taken to the same port.[1]

Mutiny was another danger of the whalers. The ship *Junior* sailed from New Bedford in 1857. Five of the crew mutinied at Christmas night, killed all but one of the mates, and took charge of the ship. On the approach to the coast of Australia, the mate was brought to deck to take charge of the navigation. The men put all the plunder available into two whale-boats and left the ship. Before leaving, they wrote a complete confession absolving all the others of any guilt. Australian authorities captured eight mutineers and they were sent home for trial on the *Junior*. Through the able defense of Benjamin F. Butler and the leniency of President Buchanan none were put to death but all served time in prison.[2] The *Globe* left Edgartown in 1822. Six months later, eight men deserted. Six others were recruited. These proved to be

[1]J. R. Spears--*The Story of the New England Whalers*, 341.
[2]J. R. Spears--*The Story of the New England Whalers*, 347.

worthless and lazy. Under the influence of Comstock, a boat-steerer, a mutiny was planned, all the officers killed or thrown overboard and the ship was taken under the command of Comstock. The ship anchored at the Mulgraves on February 14, 1824. Government was set up on shore and three days later Comstock was killed. The next night six of the crew, who were not a party to the mutiny, cut the cable and sailed to Valparaiso where the ship was delivered to the American Consul. A short time later trouble with natives led to the death of all but two of those left on the island. In December 1825 these two were taken away by the United States war schooner, <u>Dolphin</u>.

IV ECONOMICS OF THE INDUSTRY

Whaling was significant to the entire nation and vital to the New England seaboard. Shortly before the Civil War only the manufacture of shoes and cotton stood before whaling in importance in Massachusetts. That its importance was recognized at that time may be illustrated by the statement of Lieutenant Wilkes, * "Our whaling fleet may be said to have very done to whiten the Pacific Ocean with its canvas------ the ramifications of the business extend to all branches of trade------" and "------are spread through the whole Union."

Massachusetts was preeminent in whaling. In 1774, the American whaling fleet numbered 360 vessels. 304 vessels were from Massachusetts. According to the Whalemen's Shipping List and Merchants' Transcript of September [illegible], 1852,** there were in port 10 ships and 4 barks from New Bedford due to sail for Pacific ports during September and October. Also there were 6 ships and one bark from Fairhaven*** planning voyages to the

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* From his Narrative of the United States Exploring Expedition written in the early forties. Quoted from Hohman, E. P.--The American Whaleman. Page [illegible].

** Paper published every Tuesday by Henry Lindsey of New Bedford. Paper quoted is volume X, No. 32.

*** Fairhaven and New Bedford are the same

***Continued from preceding page: number being on opposite sides of the Acushnet River. Records often give the figures of the two under New Bedford.

U. S. Census--History of American Whale Fishery, 11.

year. To outfit and equip these vessels for one voyage it required 1,300,000 barrels of iron-bound casks, costing $1,[illegible]0,000. Food and other equipment ran to $10,[illegible]0,000. The estimated value of these ships as they sailed was $[illegible]0,1[illegible]0,000.*

The returns of the whaling fleet were good. Between 1771 and 1775 the average annual production was 45,000 barrels of sperm oil, [illegible],500 barrels of right whale oil, and 75,000 pounds of bone. In 1831, the products of the whaling industry for the first time brought in over $[illegible],000,000. In that year it brought in 5,[illegible] gallons of sperm oil to sell at $.[illegible] a gallon, 3,[illegible] gallons of whale oil to sell at $.3[illegible] a gallon, and nearly 1,000,000 pounds of whalebone to sell at $.[illegible] a pound. In 1837, the returns were [illegible] gallons of whale oil and 5,3[illegible],13[illegible] gallons of sperm oil. In 1846 sperm oil brought $.[illegible] a gallon. The catch that year was [illegible] gallons. In [illegible], [illegible] gallons sold at $1.[illegible]. In 1845, a record catch of 11,[illegible] gallons of whale oil sold for $.[illegible] a gallon. In 1855, [illegible] gallons sold for $.[illegible] a gallon. The record catch for whalebone was [illegible],300 pounds in 1853. It sold at $.3[illegible] a pound in contrast to one-third the high price of $.[illegible]0 a pound of the previous year. The year of the highest income was 1854 with $10,[illegible].20. 1857 was nearly

* Quoted in Old Dartmouth Historical Sketches No. 11. Fifty Years a Whaler by [illegible] Littlefield.

[illegible] The years 18[illegible] to 18[illegible], inclusive, [illegible] the fleet. Small wonder [illegible] whalers.

[illegible] ships [illegible] Canada.* [illegible] **[illegible]:--

Sailed	Returned	Absent			Profits***
		Years	Months	Days	
[illegible]	Sept. 1?, 18??	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

***

* A model of this ship, [illegible], is in the Whaling Museum in New Bedford.

** From Old Dartmouth Historical Sketches No. 47 quoted in E. P. Hohman--The American Whaleman. Page 282.

*** This table shows clearly the tendency of the [illegible]

[illegible] record was [illegible] by [illegible] the loss was $11,[illegible].47. Her eleventh trip showed the small profit of $2,[illegible]. Loss of investment of $1[illegible],[illegible]53,[illegible] resulted from her twelfth trip.

After the Civil War, whale yields show considerable change. Whalebone became the product which kept the industry alive as the growing use of petroleum and cotton seed oil decreased the demand for whale oil. Whalebone which in 1844 sold for $.30 a pound, in 1850 sold for $.305, in 1867 for $1.71, and in 1895 for $7.69. During that time sperm oil varied in price also. In 1845 it sold for $.73 a gallon, in 1860 for $1.[illegible], in 1866 for $2.55, and in 1895 for $.82. After the Civil War, Arctic whaling for the right or bone producing whale takes the place of tropical sperm whaling.[1]

***continued from preceding page: period in the industry, [illegible] longer voyages. During the thirty [illegible] years, the voyages increased from just under two years' duration [illegible] by five. A comparison of dates will show also how [illegible] the ship remained in port between voyages. Capital was not allowed to remain idle.

[1] J. R. Spears--The Story of the New England Whaler, 305.

Returns on voyages among the [illegible]. In 18[illegible], the total income from whaling was $6,297,115.13 or an average of $[illegible] per each ship. In 18[illegible], the return per ship was $1[illegible]. This was in the so-called "hey-day". In 18[illegible], the return was $15,350.[1] In 1905, the time of the last whalers, the return was $10,000.*

Some of the record catches were:

Sarah of Nantucket, Captain Frederick Arthur, whaling in the Pacific, May 26, 1827--April 19, 1830, brought the largest cargo of sperm oil up to that time to Nantucket 3,497 barrels, sold for $89,000.

William Hamilton of New Bedford, Captain William Swain, returned 1832, record for all sperm voyages, total 4181 barrels (4000 barrels brought home, 181 barrels sent home), sold for $100,000.

South America of Providence, Rhode Island, Captain R. N. [illegible], [illegible] month voyage, largest catch of whale oil ever--[illegible],300 barrels, also [illegible] barrels sperm oil, $[illegible]

---

* While these figures do not seem significant, I raise the question, 'Might they not assume importance if they were converted for cost of living? Might they not become important if compared with return on investment in other industries?'

[1] J. R. Spears, The Story of the New England Whalers, [illegible].

pounds of [illegible].

George Washington, of New Bedford, Captain [illegible], returned in 1851, 7,000 barrels of [illegible] oil, 75 barrels of [illegible] oil, and 30,000 pounds of bone, his [illegible] [illegible] [illegible] [illegible] by freighters.*

Pioneer, of New London, Captain Ebenezer Morgan, June 1, 1864–September 18, 1865, 1391 barrels of oil, [illegible] pounds of bone, sold for $151,060, net profit $[illegible]. This is the record voyage for any vessel. ([illegible] [illegible] [illegible]-[illegible] [illegible] [illegible] [illegible]-[illegible] [illegible].)[1]

Not all voyages made such profits as the great [illegible]. Many dangers assailed the whale-ships. The "profit and loss" theory of business often came into play. Second, the most of the profits went to the entrepreneurs, the shipowners; third, [illegible] went to the officers and men.

Then the "lay" method [illegible] [illegible] a form of profit sharing.** Some writers [illegible] it as an excellent example of division of profits on the part of the owners and the seamen. Capital

---

* After the Pacific became the leading whaling grounds, vessels often put into a Pacific port, sent oil home or sold it there, [illegible] filled up again. See [illegible] [illegible] [illegible] page [illegible].

** See pages [illegible] and [illegible].

1 Figures of record are taken from J. R. Spears -- The Story of the New England Whalers, 334,335.

and labor shared the luck, as it were. Others believe the [illegible] their [illegible] in an ownership [illegible].[1] The advance of credit for the outfit with interest, the "slopchest" account with interest, the advance of wages with interest ate up a man's lay and kept him in bondage to the owners. After the Civil War, native-born Americans, no longer entered this industry of harsh discipline, great dangers and little returns. It was left for the [illegible] islanders to man. It [illegible] or [illegible] greater profits on land. But in the period prior to the Civil War, owners and captains alike [illegible] their [illegible] sailors.

There was some marine insurance written for whalers. The [illegible] in Nantucket had a collection of policies signed by Joseph Coffin and Sons, covering the years 17[illegible] to 18[illegible]. The first policy written by a company dates from 18[illegible]. Early insurance was written by individual writers. In the early nineteenth century there were two marine insurance companies in Nantucket, the Pacific Marine Insurance Company and the Nantucket Union Marine Insurance Co. In the Nantucket collection there are three policies written for $5,000. In two cases the premiums were $[illegible]; in the third, $300. The policies were for 2, 3, and 4 years or until the end of the voyage.[2]

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[1]Both opinions are well summed up by W. S. Tower—History of the American Whale-fishery.

[2]Material gathered by author from sources in Nantucket.

The port records of Nantucket tell a story of their own. They may be analyzed from many angles. Accompanying is a tabulation of the vessels sailing from each year 1815 through 1869, with a few remarks of special interest.

Note especially:

The records begin in 1815.

Great number of ships sail in 1821.

Few ships recorded after 1846.

1840 and 1841 New ships were bought, new stimulus to the industry due to "The Camel".

1857 Some ships were sold.

After this date there are many sailings from other ports.

1869 A definite drop in sailings is noticed.

1869 The whaling days are over.

Nantucket Records

taken from Port Records of Nantucket

in Nantucket Whaling Museum

Ships Sailed	Year	Remarks
31	1815	25 ships, 6 brigs, 3 new, 1 lost.
17	1816	7 new, 5 brigs.
27	1817	
39	1818	
31	1819	
33	1820	
35	1821	Ship *Alexander* returned with 2836 barrels, sperm oil, largest catch, after 33 months' voyage.

Ships Sailed	Year	Remarks
[illegible]	1822	
[illegible]	1823	
[illegible]	1824	
[illegible]	1825	
[illegible]	1826	[illegible] new, Ship [illegible] brought in [illegible] barrels sperm oil, [illegible].
[illegible]	1827	
21	1828	3 Nantucketers bought.
[illegible]	1829	7 Nantucketers bought.
21	1830	
[illegible]	1831	2 ships sold to New Bedford.
[illegible]	1832	
[illegible]	1833	
[illegible]	1834	
[illegible]	1835	
[illegible]	1836	
19	1837	
17	1838	
[illegible]	1839	[illegible] sold to New Bedford, Fairhaven, [illegible] New London, a bark sold this year [illegible] first [illegible] brought in [illegible].*
[illegible]	1840	1 new, 1 sold [illegible].
[illegible]	1841	2 new, 2 sold [illegible] Bedford.
[illegible]	1842	
[illegible]	1843	
13	1844	
[illegible]	1845	
[illegible]	1846	
[illegible]	1847	
[illegible]	1848	2 sold to New Bedford, [illegible] San Francisco [illegible] 12 sailed for California; 2 returned; [illegible].
[illegible]	1849	
[illegible]	1850	1 sailed for California.
[illegible]	1851	
[illegible]	1852	[illegible], lost [illegible] 2 sold to New Bedford, [illegible] "[illegible]",** [illegible] 30 barrels, [illegible].

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* See pages 18 and 19.

** [illegible]

Ships Sailed	Year	Remarks
15	1853	11 ships and 1 [illegible].
11	1854	[illegible] of whale oil, [illegible]; [illegible] in the Pacific; [illegible] clean. 1 [illegible].
10	1855	([illegible]).
11	1856	
8	1857	
6	1858	[illegible], 3 sold to New Bedford, [illegible] S[illegible] F[illegible].
4	1859	2 sold [illegible] New Bedford, [illegible].
2	1860	
1	1861	1 sold [illegible], [illegible].
1	1862	
0	1863	No ships fitted.
1	1864	
2	1865	[illegible]; [illegible] Indian Ocean. Total [illegible], [illegible].
4	1866	2 sold to Talcahuano*
7	1867	
5	1868	2 sold to Callao**
3	1869	1 brig, 1 ship, 1 schooner; 2 sold to New Bedford; [illegible], the last Nantucket whaler sold to [illegible].

**Continued from preceding page: [illegible], i.e., to return with sails clean or not discolored by "trying-out".

* Talcahuano in Chile, best harbor on Pacific coast of South America.

** Callao, principal port of Peru.

The outfitting of a whaler for a long voyage was a tremendous[1] affair and a costly one. It will be well to note in this connection Starbuck's remark in his History of the Whale Fishery that in 1851, 540 vessels were fitted out in New England for whale-hunting cruises. This outfitting required 50,000 barrels of flour, 70,500 barrels of beef, 13,000 [illegible], 2,000 tons of hoop iron, 6,000,000 staves, and 2,000 tons of cordage. Also were required large quantities of wood for cooking, lumber, sugar, kitchen ware, as well as smaller supplies such as molasses, beans, rice, tea, coffee, sugar, etc.

These voyages became longer, many whalers [illegible] to Honolulu, and some [illegible] from New Bedford [illegible].

To follow the work involved in the outfitting of a whaler will show the amount of business to those [illegible] from this one industry and will give [illegible] and [illegible] the [illegible] commercial [illegible].

First, the hull of the ship is examined by carpenters and caulkers. All leakages and planking are thoroughly examined, [illegible] to see if there is [illegible]. Before the days of [illegible], [illegible] into the dock. This was done [illegible], [illegible] using [illegible]

[1]Figures given in connection with outfitting a whaler are taken from L. A. Littlefield--Fitting out a Whaler.

[1]L. A. Littlefield--Fitting out a whaler, page 12, gives this figure. M. B. Maury--Whalers and whaling, page 30, gives $30,000 for a long voyage.

There are three principal products of the whale fishery. These are the whale oil or the oil coming from the trying-out of the fatty layer of blubber, sperm oil coming only from the fatty structure of the case of the sperm whale, and whalebone.

Whalebone, or more correctly baleen,[1] comes from the mouths of the whalebone whales or Mysticeti. It consists of several hundred horny, elastic slabs or plates which are attached to each side of the upper jaw. There are 300 to 360 slabs on each side. The number as well as the length and quality varies with the species and size of the whale. When the whale's mouth is closed, the baleen fits into deep grooves. When the whale's mouth is open, the baleen springs forward to [illegible] fill entirely the space between the jaws. The [illegible] of each slab has a fringe of [illegible] [illegible]. The [illegible] gives the [illegible]. A single [illegible] slab may be 12 feet in length and 10 to 12 inches in width. The [illegible] right whales give baleen of good quality. In finback whales the slabs are shorter, and in humpback whales the baleen is of [illegible] poor quality [illegible].

[illegible] is not [illegible] the jaw of the whale. About 12 inches of it is [illegible]. This [illegible].

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[1] Facts concerning whalebone taken from C. H. Stevenson-- Whalebone, 639.

[illegible]

[illegible]

Statement of the Product of Sulphur

in the United States

during each year since 1900[1]

Year	Production	Value per ton
1901		
1902		
1903		
1904		
1905		
1906		
1907		
1908		
1909		
1910		
1911		
1912		
1913		
1914		
1915		
1916		
1917		
1918		
1919		
1920		
1921		
1922		
1923		
1924		
1925		
1926		
1927		
1928		
1929		
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1937		
1938		
1939		
1940		
1941		
1942		
1943		
1944		
1945		
1946		
1947		
1948		
1949		
1950		
1951		
1952		
1953		
1954		
1955		
1956		

[1]Figures from C. H. Stevenson--Sulphur, T.

Year	Production	Average value per pound
1857	[illegible]	$0.[illegible]
1858	[illegible]	[illegible]
1859	1,[illegible]	[illegible]
1860	[illegible]	.30
1861	[illegible]	[illegible]
1862	[illegible],500	[illegible]
1863	[illegible]	1.[illegible]
1864	[illegible]	1.[illegible]
1865	[illegible]	[illegible]
1866	[illegible]	[illegible]
1867	1,[illegible]	1.[illegible]
1868	[illegible]	1.0[illegible]
1869	[illegible]	[illegible]
1870	[illegible]	[illegible]
1871	[illegible]	[illegible]
1872	[illegible]	1.[illegible]
1873	[illegible]	1.0[illegible]
1874	345,500	1.10
1875	[illegible]	[illegible]
1876	[illegible]	1.[illegible]
1877	[illegible]	[illegible]
1878	[illegible]	[illegible]
1879	[illegible]	[illegible]
1880	[illegible]	[illegible]
1881	[illegible],300	1.[illegible]
1882	271,[illegible]	1.[illegible]
1883	[illegible]	[illegible]
1884	[illegible]	[illegible]
1885	[illegible]	[illegible]
1886	[illegible]	[illegible]
1887	[illegible],011	3.1[illegible]
1888	334,[illegible]	[illegible]
1889	[illegible],113	3.50
1890	30[illegible],710	4.[illegible]
1891	[illegible],768	[illegible].39
1892	369,985	5.35
1893	411,315	3.08
1894	[illegible],500	[illegible]
1895	11[illegible],960	[illegible]
1896	207,[illegible]	[illegible]
1897	[illegible],100	3.[illegible]

Year	Production	Average value per pound
[illegible]	2[illegible],120	$3.10
[illegible]	[illegible],100	[illegible]
1900	[illegible]	[illegible]
1901	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

From 18[illegible] to the outbreak of the Civil War, the output [illegible] about [illegible] pounds [illegible], the [illegible] being [illegible] pounds in [illegible], [illegible]. Since [illegible] there has been a large [illegible] in [illegible]. The [illegible] in the yield of [illegible] has been largely [illegible] by [illegible] the value per pound. The [illegible] in [illegible] in 18[illegible] to [illegible] in 18[illegible] with a corresponding [illegible] in production [illegible] the Civil War. Again the [illegible] in 18[illegible] and 18[illegible] [illegible] be accounted for by [illegible]. The [illegible] in 18[illegible] being [illegible] production.

The [illegible] value of [illegible] is due to its [illegible] qualities of [illegible], [illegible] in [illegible], [illegible] ability, [illegible]. It [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

---

* See page 42

** [illegible]

[illegible] refined sperm oil. Dogfish [illegible] used in the [illegible] oil [illegible]. Whale [illegible], [illegible] is used to make [illegible] fertilizer [illegible],

The [illegible] oil, [illegible] refining process. [illegible] the [illegible], it goes to large 2,000 gallon [illegible], [illegible] and agitated with alkali (caustic soda). [illegible] oils. The [illegible] is called [illegible] oil [illegible] is used for making [illegible] compounds. [illegible]. The oil [illegible] it is ready for shipment. [illegible] oil, [illegible] refined, [illegible] oil. It is used as a fine lubricating oil. Spring oil is compounded with the winter oil.

Among the minor products of the whale fishery are whale meat, guano, and ambergris. Whale meat is used as food in Japan. It is cheaper than beef. In winter whale meat is fifteen cents a pound;[1] at other times it is half that price. Also fresh blubber, heart, liver, tongue, and intestines are used for food. A chemical analysis of the flesh shows water,

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[1] R. C. Andrews--Whale hunting with gun and camera, 36.

11.80%; ash, 1.70%; protein, 12.12%; fat, 1.4%; [illegible], 0.31%.[1] This analysis [illegible] lean beef. A [illegible] [illegible] 19.50% [illegible].

[illegible] of the bean. This is [illegible] and 21% [illegible]. [illegible] [illegible] 17 in the [illegible].[2]

The [illegible] [illegible].[3] [illegible] [illegible].

[illegible] is used in the making of perfumes, [illegible] [illegible] in the East [illegible]. [illegible] the [illegible].

[1] Analysis by M. E. Jaffa, Professor of Nutrition, University of California [illegible] [illegible], 95.

[2] [illegible] [illegible] E. E. [illegible] [illegible], 1907.

[illegible] been found. [illegible] [illegible] [illegible] 1877, [illegible] [illegible] [illegible] [illegible] 1878, [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] unknown.

The ship *Splendid* of [illegible] a 100 barrel sperm whale. While the crew was cutting in, the whale was noticed to be sinking. Cutting in to [illegible] in the [illegible], the spade rebounded as if it had hit rubber. The [illegible] had several lumps of dark material [illegible]. [illegible] looked like [illegible] out of the [illegible]. They proved to be ambergris. [illegible] [illegible].

In 1890, [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. This [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. On the [illegible] [illegible] [illegible] [illegible] [illegible]. The [illegible] [illegible]. It [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

3 [illegible] *[illegible] of the Sea* [illegible] *[illegible] Gold*, [illegible] [illegible].

1

[illegible] apothecary learned of this incident and found 1,[illegible] ounces of [illegible].

V CONCLUSION

chase, as long as the harpoon alone was used, was sportsmanlike and thrilling. The hazards were many and dispersed. This chapter deals with the romance and drudgery of the industry.

Chapter four becomes more pensive and businesslike. The capital invested, returns on the capital, prices and record catches, insurance, outfittings, and the products of whaling are discussed to show the industry's place in the economic life of Southeastern Massachusetts.

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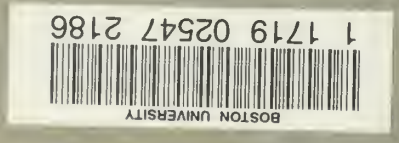
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